

Spacecraft Cabin Particulate Monitor, Phase II

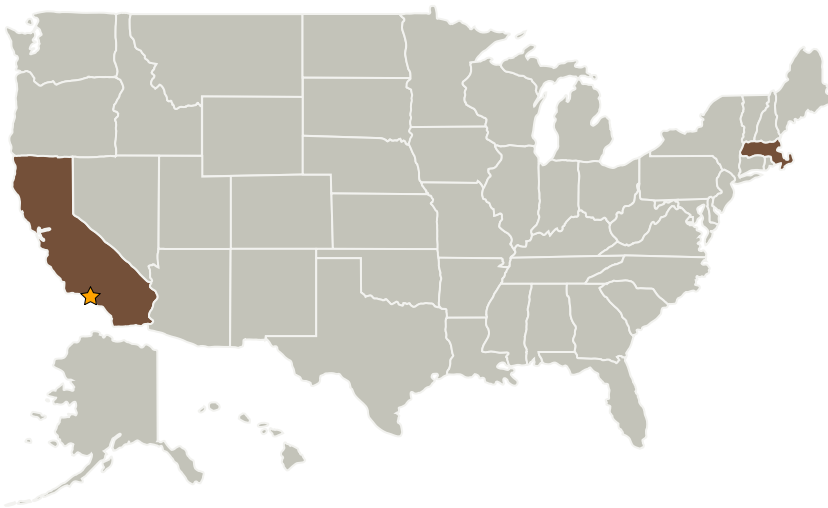
Completed Technology Project (2009 - 2011)



Project Introduction

We have built and tested an optical extinction monitor for the detection of spacecraft cabin particulates. This sensor sensitive to particle sizes ranging from a few nanometer to tens of micrometers in diameter. Designed to utilize commercial off-the-shelf components, the monitor, once calibrated, requires minimal recalibration and only periodic baseline determinations, a process which can be automated as part of the operation of the instrument. It employs no consumables. This monitor employs cavity attenuation phase shift technology and involves the use of a light emitting diode coupled to a low-loss optical cavity. The Phase I project involved a proof-of-principle demonstration that demonstrated a sensitivity of less than 0.1 micrograms per cubic meter. During the Phase II project, a prototype sensor will be delivered to NASA for the purpose of laboratory and field measurements. A major goal will be to miniaturize the monitor.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Jet Propulsion Laboratory (JPL)	Lead Organization	NASA Center	Pasadena, California
Aerodyne Research, Inc	Supporting Organization	Industry	Billerica, Massachusetts



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

California

Massachusetts

Project Transitions



February 2009: Project Start



August 2011: Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
 - └ TX06.4 Environmental Monitoring, Safety, and Emergency Response
 - └ TX06.4.1 Sensors: Air, Water, Microbial, and Acoustic